



Energy Assimilation in Plant and Animal Nutrition

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ABOUT THE STUDY

Nutrition refers to the process by which an organism acquires and absorbs (utilizes) nutrition. It is one of the basic characteristics of living things. Nutrients are necessary for the growth and development of living organisms, nutrients are necessary for energy supply because they are decomposed to release energy, nutrients are also necessary for repair of aging tissues, and nutrients are highly synthesized. Necessary for important polymers in the body such as hormones and enzymes. These are the two main feeding modes. In autotrophyism, feeding mode, organisms make their own food from simple minerals in the environment such as carbon (IV) oxides, water and mineral ions. Organisms that make their own food in this way are autotrophic organisms. Heterotrophic organisms, a mode of nutrition in which the organism depends on the food material already produced by other organisms. Heterotrophs are organisms that eat food ingredients that have already been manufactured. Such organisms often carry chlorophyll, which captures the required energy from sunlight. This type of meal is common among members of the Plantae Kingdom. Some protists and bacteria are also photosynthetic. Photosynthesis allows autotrophs to make their own food, thereby meeting their nutritional needs. Photosynthesis converts solar energy into a form (chemical energy) that can be used by other organisms that cannot produce their own food. Most photosynthesis occurs in the leaves.

To understand the process of photosynthesis, it is important to understand the structure of leaves. The photosynthetic process is a complex process involving a series of reactions. It can be summarized into two major reactions. This is the first stage of photosynthesis. It happens in the presence of light. It will not work without light. The light stage occurs in the chloroplast grana. Two basic processes occur in the light period photolysis of water this refers to the use of solar energy to decompose water molecules to produce hydrogen ions and oxygen gas. This is supported by the fact that Grana contain chlorophyll molecules that take in solar energy for photolysis. The oxygen gas produced can be released into the atmosphere or used by plants for

breathing. $\text{Water} \rightarrow \text{hydrogen atom} + \text{oxygen gas}$. It is herbivorous and most do not have maxillary lateral incisors. Instead, there is a horn pad where the grass is pressed and mowed by the mandibular incisors. They have long tongues that help cut and move food. There is a gap in the lower jaw that separates the canines from the premolars called diastema. This allows the tongue to manipulate food. Herbivore teeth have open enamel that can grow continuously to replace surfaces worn by polishing. Their incisors are wedge-shaped to cut grass and plants along with a horn pad. The chin has a movable joint that makes it easier to move the lower chin laterally to grind grass.

Pet food is a molecule of amino acids and glucose that enters the blood system by active transport through the inner layer of epithelium and the walls of capillaries. Herbivores most do not have upper incisors. Instead they have a horny pad against which grass is pressed and cut by the lower incisors. Have a long tongue that assists in the cutting and moving food. They have a gap in the lower jaw separating canines from premolars known as diastema which allows the tongue to manipulate food. Herbivore teeth have open enamel which allows for continuous growth to replace worn out surfaces due to grinding. Their incisors are wedge shaped to cut grass and vegetation together with the horny pad. The jaws have movable joints to allow the sideways movement of lower jaw to facilitate grinding of grass.

Animal nutrition is molecules of amino acids and glucose passes through the epithelial lining and capillary walls into the blood system by active transport. The capillaries drain into the hepatic portal vein where the absorbed products are transported to the liver before they are circulated to other body parts.

The fatty acids are absorbed into the lacteals of the villi which drain into the lymphatic vessels. The lymphatic vessels later join the blood circulatory system which transports them to other body parts. The ileum is adapted to absorption in many ways. It is long to provide a large surface area for absorption; it has a narrow lumen so as to bring the digested food into close contact with the walls of the ileum for easier absorption. It is highly

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coiled to slow down movement of food thus allowing more time for digestion and absorption of food.

The inner surfaces have numerous villi and microvilli to increase surface area for absorption of end products of digestion. The epithelial lining is one cell thick to reduce the distance through which digested food diffuses. Has a dense network of blood capillaries into which digested food materials diffuse to increase transport and thus maintain a steep concentration gradient. Have lacteal vessels in the villi for absorption of fatty acids and glycerol. More Importance in vitamins, mineral salts, water human nutrition are Glucose oxidized to release energy ,excess glucose is stored under the skin to provide heat insulat , glucose is used to synthesize complex polysaccharide such as cellulose

that is an important structural compound in plants. Fatty acids and glycerol, oxidized to release energy, combine to form neutral fats stored under the skin to provide heat insulation, used to build structures. Amino acids Used to synthesize proteins for general body growth, oxidized during starvation to release energy. Vitamins these are organic chemical compounds that are essential for a healthy body. Some are synthesized in the body through the action of some microorganisms while some are also obtained in fresh fruits and vegetables. Vitamins are destroyed when foods are excessively cooked. They are required in small quantities. They play vital roles in metabolic reactions. Some act as co-enzymes while some influence the intake of certain substances.